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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,852	11/07/2001	Shigeki Mori	712-032	1854

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EXAMINER	
PADGETT, MARIANNE L	
ART UNIT	**PAPER NUMBER**
1762	6

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
10/019,852	Mori et al
Examiner	**Group Art Unit**
M.L. Padgett	1762

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☐ Responsive to communication(s) filed on 11/7/01, 5/13/02 & 5/14/02.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-19 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-19 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☒ The drawing(s) filed on 11/7/01 is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☒ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☒ Copies of the certified copies of the priority documents have been received (JP11/299806 & 2000/048386 & JP11/139211) in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s) (5/13/02) & (5/14/02)

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4 & 5

☐ Interview Summary, PTO-413

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

1. It is noted that in apparatus claims the substrate being treated, and process gases used there in are not part of the apparatus, and only considered to the extent that the apparatus must be capable of processing / handling them, and the structure that capability necessitates. Therefore, The production of DLC films and use of carbon source gas cause no necessary limitation in the apparatus as claimed. The treatment of plastic containers is only significant in that the described electrode configuration must be able to enclose or be configured to container shapes as claimed. That the container is claimed to be plastic has no patentable significance to the apparatus structure as claimed. Note for method limitations, such as power applied, only the capability need to be present. The actual power values as claimed, need never to be applied in the apparatus.

By the phrase "degassing unit" the examiner will assume that vacuum unit or exhaust unit or the like is the intent, as such are more commonly used terminology in this art and appear to be the intent of this phrasing.

2. The drawings are objected to because Fig.2 (a) is partially labeled in Japanese. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. Claims 1-3 and 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the description of the "first outer electrode" requires it to be "disposed along the bottom of the...container" (lines 13-14, emphasis added), however the last 3 lines of the claim appear to contradict this because something that is below the bottom will have trouble having its upper edge some where else as described. The examiner assumes/guesses that this language is an attempt to describe bottom electrode (4) in figure 1, which is disposed along the bottom and along the sides of the body of the

container, so that its upper edge is positioned as claimed. Note that claim 7 has the same phasing discrepancy in lines 2-6.

4. The Japanese patent 06-280012 to Taniguchi, and the Journal article to Toshimichi, were cited by the Japanese PTO as reading on claims 15 and 19 in the PCT parent of the case, however as these references are in Japanese, so can't be read by the present examiner, no reevaluation of these references can be made at this time, but full translations have been ordered from the PTO translation division. They have also been ordered for JP 11-256,331A (Zenitani Toshihiro et al) and JP 10-226,884 (Shimamura), and incomplete machine translations have also been supplied for these.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 3-4 are rejected under 35 U.S.C. 102(b) or (e) as being clearly anticipated by Shimamura Hidenori (JP 10-226,884).

In Shimamura (884), see the figures, the English abstracts and claims (translation), particularly noting claims 5, 7-9 and 14-16, and Figure 6, 8-14 which illustrate a multi-portioned outer electrode, to which portions RF power may be separately applied, and may be in at least 3 pieces as illustrated, with the bottom electrode portion forming a cup shape about the bottom of the illustrated bottle (i.e. plastic contain, also mistranslated by machine as plastic envelope). An internal electrode is also used to supply a carbon source gas to the bottle interior, inorder to deposit hard carbon film therein, and the plasma is generated between the internal and external electrodes as claimed.

7. Claims 2, 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimamura (884) alone, or in view of Zenitani Toshihiro et al.

While Shimamura (884) shows separate lines in the circuitry going to different outer electrode portions, and claims supplying power to each portion individually (claim 14^{+}), the available parts of the translation do not discuss whether or not that individually supplied power is equal or may be differentiated. However, the implications of individual supply, is the capability of individual control, hence it would have been obvious to one of ordinary skill in the art to construct the apparatus of Shimamura with this capability. As the bottom portion of the electrode tends to be further from the interior electrodes or to have a greater volume space to fill with plasma, and neck regions of a narrow neck bottle as illustrated would be closer, or have a lesser volume in which plasma was required, it would have been further obvious that greater power would have been expected to be supplied to those portions most distant from the interior electrode, so that when plasma is generated as taught between the interior

and exterior electrodes, that it will be evenly distributed within the bottle inorder to effect even coating therein. While the figures show at most 3 portions to the illustrated exterior electrodes, claim 14 provides the teaching that two or more divided portions of the exterior electrode may be employed, hence is inclusive of and suggestive of larger numbers of portions as claimed by applicants.

The available translated portions of Shimamura discuss the coating as "hard-carbon coating film", which does not specifically mean the claimed diamond like carbon (DLC) film as is required in the method claims, however taught hard-carbon is a broader generic category which is inclusive of DLC, hence DLC coating would have been obvious possible species of hard-carbon film, especially as plasma deposition as taught by Shimamura is a typical mode of such deposition. Alternately, Zenitani et al, who has a similar apparatus structure, illustrating a 2 portion outer electrode and an interior electrode that supplies hydrocarbon gas (a carbon source), particularly teach that interior deposits are DLC (see abstract; Fig.1; claims; [0007]; [0009-0011+]; [0014-0015]; Example, esp. [0022]), hence it would have been further obvious to one of ordinary skill with the motivation of Zenitani et al to show both the desirability and the capability of DLC deposition, to ensure that Shimamura's hard-carbon coatings were DLC.

8. The US. PN 6,294,226 B1 to Shimamura is noted to be the national stage of WO 98/37259 published Aug 27, 1998, and is considered by the examiner to provide a translation of the Japanese PCT document

9. Claims 1-4, 6-9 and 11 are rejected under 35 U.S.C. 102(b) or (e) as being clearly anticipated by Shimamura (WO 98/37259).

In the U.S. patent that supplied the translation to the PCT document to Shimamura, especially see Col. 22, lines 35-Col. 26, line 6 discussing Fig. 8-11 with special attention to the descriptions of Fig. 8 and 10, where col. 22, lines 35-42 & 59-67 discuss the outer electrode 30 being made of 30A (30Aa + 30Ab) + 30B(electrode lid); and Col. 23, lines 40-68 and col. 25, lines 42-56 teaching separate power application to upper and lower outer electrode portions, such that those to the upper portion are smaller,

and where either one power source with separate matching boxes, or totally separate power sources may be used to achieve this teaching. Note Shimamura (PCT/US) in essentially equivalent to (JP-'884), but the former is more detailed and calls the deposit DLC instead of hard carbon. In Shimamura's US version also see claims 6-7, 9-10 and 15-23.

10. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimamura (PCT/US) as discussed above.

While Shimamura (PCT/US) does not explicitly teach a fourth outer electrode segment as in the claims, they generically teach plural portions which is inclusive of more than illustrated 3 segments, and it would have been obvious to one of ordinary skill in the plasma art to adjust or determine the optimum number of electrode portions, according to the shape of the particular plastic container to be treated, since if there is too much diameter, i.e. volume, variation enclosed by one portion, one will not be able to adjust the powers adequately in order to provide for the even deposition taught by Shimamura via the use of adjusted power.

11. Claims 12-19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tomaswick et al.

In Tomaswick et al, see the abstract; col.3, line 29-37 (plastic container substrate, such as PET and molded, with DLC coating); col. 4, lines 1-30 (1000 Å, about ≤50 at.% or 20-40 at. % H; density 1.7 – 1.8 g/cm^3); claims 1-20, esp. 1, 5-8, 10, 14 and 16, where the options of coating the interior of containers, and thickness of at least about 10 Å or 20-1500 Å are taught.

12. Other art of interest for relating to the above apparatus, process or product include Chou et al; Nagashima et al (139 or 619B1); Hama et al; and Kimoch et al.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M L. Padgett whose telephone number is 703-308-2336 or after mid December (571) 272-1425. The examiner can normally be reached on Monday-Friday from 8:30 am to

4:30 pm. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

M. Padgett/lap
November 6, 2003
November 7, 2003

MARIANNE PADGETT
PRIMARY EXAMINER